



The Nautel Naval Echo Sounder (NES-DF) is MIL Qualified, compact, state-of-the-art acoustic system. Its compatibility with third party transducers makes it ideal for retro-fit on existing naval vessels.

The system's bottom detection capability is enhanced by modern digital signal processing. The NES-DF's 256-colour LCD high resolution screen offers a substantially better differentiated presentation of bottom structures than conventional black/white paper recordings.

A wide range of selectable operating frequencies – 12 / 30 / 50 / 200 kHz – are offered as standard.

Synchronous operation with multiple transducers on different frequencies offers the option to integrate, process, and display environmental data such as pressure, temperature, density, salinity, and sound velocity of the water.

## FEATURES

- MIL Qualified
- Nautel C-Tech CommandView visualization software
- Single or multiple transducer operation
- Fast ethernet communications port, IEEE 802.3u / 100Base-T protocols
- RS-422 interface that is compatible with NMEA 0183 standard
- Visual and audible alarms at pre-set depth, with mute function
- Start-up self testing & fault finding diagnostics
- Water depth or depth below keel (DBK) available in a variety of presentation modes

## NES-DF Specifications

<b>Operating Frequency</b>	500 Hz to 675 kHz
<b>Operating Depth Range</b>	0 – 1000, 2000, 3000, 4000, 8000, 12000 m
<b>Range Scales</b>	Configurable and selectable by operator including Selectable shallow/deep range scales, with the shallow scale set to 1/10th of deep scale, if desired
<b>Accuracy</b>	Maximum resolution 2 cm to 1 m, depending upon selected range scale, or less than +/- .05% of selected range scale
<b>Discrimination</b>	Range scales are operator selectable and may be set so that they are not smaller than 5.0 mm per meter depth on the shallow range scale and 0.5 mm per meter on the deep range scale
<b>Pulse Length</b>	0.1 ms to 100 ms
<b>Mode</b>	Active, mono-pulse and stand-by
<b>Type of Pulse</b>	Ping or CHIRP
<b>Minimum Sounding Depth below Transducer</b>	Less than 0.6 m at shallow range scale
<b>Pulse Repetition Rate</b>	No slower than 12 pulses per minute on deep range (3000 m), and 36 pulses per minute in shallow range
<b>Gain Control</b>	Operator selectable TVG and AGC for depth finding or manual control better than +/- 1% of scale end value
<b>Sound Velocity</b>	Adjustable from 1400 to 1600 m/sec
<b>Transducer / Keel corrections</b>	Adjustable from 0 to 15 m in one meter steps
<b>Processor</b>	XILINX Virtex 5 FPGA
<b>Data Storage (standard)</b>	Slim anti-shock high speed 80G SATA HDD
<b>Touch Screen Resolution</b>	4096 x 4096, 256 colours
<b>Controller Interface Drivers</b>	Serial or USB
<b>Input Power</b>	12 Vdc, 5 Adc
<b>MTBF</b>	Greater than 20,000 h
<b>MTTR</b>	1 h
<b>Operating Temperature</b>	Designed to conform to MIL-STD-810F (0° C to +50° C)
<b>Storage Temperature</b>	Designed to conform to MIL-STD-810F (-20° C to +85° C)
<b>Humidity</b>	Designed to conform to MIL-STD-810, Method 507.3 (5% to 95%, non-condensing)
<b>Vibration</b>	Designed to withstand MIL-STD-167-1, Type 1 (17 to 500 Hz, 3G peak to peak)
<b>Shock</b>	Designed to withstand MIL-S-901, Grade B, Class II (20G / peak, 11 m sec)
<b>EMI/EMC</b>	Designed to meet the requirements of MIL-STD-461E, Para 5.2, Table V, Code A
<b>EMP</b>	Designed to withstand MIL-STD-1310
<b>Salt / Fog</b>	Designed to resist the effects of MIL-STD-810, Method 809
<b>Noise</b>	Designed to operate within MIL-STD-740, Type 3
<b>Safety</b>	MIL-STD-882, Requirement 1
<b>Quality and Workmanship</b>	MIL HDBK 454, Guideline 9
<b>Front Bezel</b>	Designed to meet IP-65, 66, 67, NEMA-4 ratings